

**MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY  
OPERATING PERMIT TECHNICAL REVIEW DOCUMENT**

**Permitting and Compliance Division**

**1520 E. Sixth Avenue**

**P.O. Box 200901**

**Helena, MT 59620-0901**

PPL Montana, LLC

Colstrip Steam Electric Station

Section 34, Township 2 North, Range 41 East, Rosebud County, Montana

580 Willow Ave., P.O. Box 38

Colstrip, MT 59323

The following table summarizes the air quality programs testing, monitoring, and reporting requirements applicable to this facility.

<b>Facility Compliance Requirements</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
Source Tests Required	X		Method 5, Method 6, Method 7, Method 9
Ambient Monitoring Required		X	
COMS Required	X		OP0513-07, Appendix E
CEMS Required	X		OP0513-07 - CO <sub>2</sub> , Appendix F - SO <sub>2</sub> and Appendix G - NO <sub>x</sub>
Mercury Emissions Monitoring System (MEMS) Required	X		
Schedule of Compliance Required		X	
Annual Compliance Certification and Semiannual Reporting Required	X		As Applicable
Monthly Reporting Required		X	
Quarterly Reporting Required	X		Opacity, NO <sub>x</sub> & SO <sub>2</sub>
<b>Applicable Air Quality Programs</b>			
ARM Subchapter 7 Montana Air Quality Permits (MAQP)	X		MAQP #0513-07
New Source Performance Standards (NSPS)	X		40 CFR 60, Subpart D, Da, and Y
National Emission Standards for Hazardous Air Pollutants (NESHAPS)	X		No, Except for 40 CFR 61, Subpart M
Maximum Achievable Control Technology (MACT)		X	
Major New Source Review (NSR) – includes Prevention of Significant Deterioration (PSD) and/or Non-attainment Area (NAA) NSR	X		
Risk Management Plan Required (RMP)	X		
Acid Rain Title IV	X		OP0513-07, Appendix H
Compliance Assurance Monitoring (CAM)	X		OP0513-07, Appendix I
State Implementation Plan (SIP)	X		General SIP applies

## TABLE OF CONTENTS

<b>SECTION I. GENERAL INFORMATION.....</b>	<b>3</b>
A. PURPOSE.....	3
B. FACILITY LOCATION .....	3
C. FACILITY BACKGROUND INFORMATION .....	3
D. CURRENT PERMIT ACTION .....	8
E. TAKING AND DAMAGING ANALYSIS .....	9
F. COMPLIANCE DESIGNATION .....	9
<b>SECTION II. SUMMARY OF EMISSION UNITS.....</b>	<b>11</b>
A. FACILITY PROCESS DESCRIPTION .....	11
B. EMISSION UNITS AND POLLUTION CONTROL DEVICE IDENTIFICATION .....	11
C. CATEGORICALLY INSIGNIFICANT SOURCES/ACTIVITIES.....	11
<b>SECTION III. PERMIT CONDITIONS .....</b>	<b>13</b>
A. EMISSION LIMITS AND STANDARDS .....	13
B. MONITORING REQUIREMENTS .....	15
C. TEST METHODS AND PROCEDURES.....	16
D. RECORDKEEPING REQUIREMENTS .....	16
E. REPORTING REQUIREMENTS .....	16
F. PUBLIC NOTICE .....	16
G. DRAFT PERMIT COMMENTS .....	17
<b>SECTION IV. NON-APPLICABLE REQUIREMENTS .....</b>	<b>18</b>
<b>SECTION V. OTHER CONSIDERATIONS .....</b>	<b>19</b>
A. MACT STANDARDS .....	19
B. NESHAP STANDARDS .....	19
C. NSPS STANDARDS .....	19
D. RISK MANAGEMENT PLAN .....	19
E. COMPLIANCE ASSURANCE MONITORING (CAM) PLAN.....	19
F. PREVENTION OF SIGNIFICANT DETERIORATION AND TITLE V GREENHOUSE GAS TAILORING RULE .....	19

## SECTION I. GENERAL INFORMATION

### A. Purpose

This document establishes the basis for the decisions made regarding the applicable requirements, monitoring plan, and compliance status of emission units affected by the operating permit proposed for this facility. The document is intended for reference during review of the proposed permit by the United States Environmental Protection Agency (EPA) and the public. It is also intended to provide background information not included in the operating permit and to document issues that may become important during modifications or renewals of the permit.

Conclusions in this document are based on information provided in the Title V Operating Permit modification application submitted to the Department of Environmental Quality (Department) by PPL Montana, LLC (PPL) on December 31, 2008. In addition, information was gathered from the PPL submittal of the Title V Operating Permit renewal application received by the Department on June 27, 2002. Additional information for the renewal application was received on October 10, 2003. Conclusions in this document are also based on information gathered from the original permit issued April 1973 and August 1981, and the PSD permit issued by the EPA in 1979. Further, information was gathered from the application submitted by the Montana Power Company (MPC) – Colstrip on June 12, 1996, and additional information submitted December 20, 1995, February 9, 1996, September 18, 1996, October 7, 1996, December 16, 1996, and September 16, 1997. Additional submittals were provided on May 14, 1998; August 13, 1998, August 16, 1999; June 26, 2000; May 1, 2001, and October 23, 2007. Additional information was provided in the application for a Montana Air Quality Permit (MAQP) submitted to the Department on January 11, 2005. An application for the current renewal was submitted on March 25, 2010.

### B. Facility Location

PPL operates the Colstrip Steam Electric Station consisting of four tangential coal fired boilers and associated equipment for generation of electricity. The Colstrip facility is located in Section 2, Township 2 North, Range 41 East, Rosebud County, Montana.

### C. Facility Background Information

#### Montana Air Quality Permit (MAQP)

On April 23, 1973, **Permit #513-111472 (#0513-00)** was issued to the MPC for the construction of Units 1 & 2, and on August 26, 1981, MAQP #0513-00 was issued to MPC for the operation of Units 1 & 2.

A petition for modification of the permit was filed by MPC on January 25, 1978. On February 28, 1978, the Board of Health and Environmental Sciences issued a board order to modify the Preconstruction Permit. The modification included changing the height of the two stacks to 525 feet and allowing the inlet sulfur dioxide (SO<sub>2</sub>) monitor values to be based on a 3-hour average.

**Permit #0513-01** was issued to MPC to include the installation and operation of a Syncoal Truck Dump and a lime silo bin vent. Syncoal fines and coarse product are combined to form a blend product that will be supplied to Units 1 & 2. The installation and operation of these sources will increase the allowable particulate emissions for Units 1 & 2 by 1.12 tons per year (TPY). Permit #0513-01 replaced Permit #0513-00 (513-111472).

**Permit #1187** was issued to MPC on January 20, 1977, for the construction of Units 3 & 4. Because the proposed facility was a major source under the Prevention of Significant Deterioration (PSD) program, the additional review requirements of the PSD program applied to the project. The state did not have authorization to implement the PSD program at the time of the application; therefore, the PSD review was conducted by the EPA. EPA issued a PSD permit for the construction of the facility on September 11, 1979.

**State Permit #1187-M1** was issued on February 5, 1980, and **Permit #1187-M2** was issued on May 26, 1981. The modifications were completed because of changes to the applicable rules and standards of the Administrative Rules of Montana (ARM) and to include changes that had been made at the facility differing from the original application.

On October 13, 1996, **Permit #1187-03** was issued. The permit correctly identified the actual maximum heat input capacity of Units 3 & 4. The units are each rated at a heat-input capacity of 7573 million British thermal units per hour (MMBtu/hr) with a production capacity of 778 Megawatts. These are nominal capacities for the facility and, depending on plant operating conditions, actual heat input to the facility may be as high as 8000 MMBtu/hr.

Permit #1187-M2 and the EPA permit contained emission limits for particulate, SO<sub>2</sub>, and oxides of nitrogen (NO<sub>x</sub>) with units of pounds per MMBtu (lb/MMBtu). To ensure that emissions from the facility were not higher than those on that the original analysis was based, this permit established emission limits for these pollutants in the units of pounds per hour (lb/hr). The new emission limits were established based on the nominal heat input to the boilers of 7573 MMBtu/hr multiplied by the current emission limits in lb/MMBtu. Permit #1187-03 also placed a yearly fuel consumption limit on each unit. The limit was equal to the heat input of each unit operating at the nominal heat input rate of 7573 MMBtu/hr for 8760 hours per year. This limit ensured that emissions of pollutants, that did not have limits in the permit, were not increased above current levels. The permit also incorporated requirements from the PSD permit issued by EPA in 1979. These requirements were incorporated at the request of MPC for the purpose of developing a comprehensive document that contained pertinent requirements from both the state permit and the EPA PSD permit. Permit #1187-03 replaced Permit #1187-M2.

On September 30, 1998, **Permit #1187-04** was issued to MPC for Units 3 & 4. The alteration included incorporation of a 3-hour rolling average SO<sub>2</sub> limit, the 1% inlet sulfur standard that was inadvertently removed during the previous modification, and the removal of the inlet monitor requirement.

The 3-hour SO<sub>2</sub> limit was incorporated in the permit to ensure protection of the 3-hour SO<sub>2</sub> standard. During the last permit action, the maximum heat inputs for Units 3 & 4 were discovered to be 8,000 MMBtu/hr. Because these heat inputs were higher than those in the original permit, the Department and MPC agreed that short-term SO<sub>2</sub> and NO<sub>x</sub> emission limits would be implemented. The Department completed modeling for the short-term SO<sub>2</sub> emission limits. MPC was limited to a maximum of 4273 lb/hr of SO<sub>2</sub>, averaged over any rolling 3-hour period from both stacks combined. These limits allowed MPC the flexibility of operating Unit 3 or Unit 4 at a higher level at any one time, while continuing to ensure protection of the standard.

The 1% inlet sulfur limit existed in the original permit, but was inadvertently removed during a previous permit action. MPC continued to maintain compliance with the 1% inlet sulfur limit, even though it was not stated in the permit.

The requirement for the inlet sulfur monitor as a compliance demonstration for the inlet sulfur content was replaced with an on-going fuel-sampling analysis. The on-going fuel-sampling analysis yielded a more accurate account of the sulfur content of the fuel, as compared to the sulfur content being correlated to SO<sub>2</sub> emissions.

The permitting action was an alteration of Permit #1187-03 because of the change in the compliance demonstration for the 1% sulfur content limit. The 1% sulfur content limit and demonstration of compliance was included in the February 28, 1978, Board of Health and Environmental Sciences Findings of Fact and Conclusions of Law and Order. The alteration process allowed public involvement in the change in the compliance demonstration method. However, the permitting action did not result in any change in the emissions from the facility. Permit #1187-04 replaced Permit #1187-03.

In letters dated June 18, 1999, and August 16, 1999, MPC and PPL requested that the permits for Units 1 & 2 and Units 3 & 4 be transferred to reflect the new ownership. The transfer of the permits was to occur when the transfer of ownership to PPL Montana, LLC was final. Through the Department's review, it was determined that Units 1 & 2 and 3 & 4 would now be defined as one source. Therefore, the permit modification transferred ownership, as well as combined Permits #0513-01 and #1187-04. The permit conditions remained the same, but were simply combined into one permit. **Permit #0513-02** replaced Permits #0513-01 and #1187-04.

On September 10, 2000, **Permit #0513-03** was issued to PPL to conduct a test burn of petroleum coke/Syncoal/Rosebud coal fuel combination in Units 1 & 2. A petroleum coke consumption limit was placed in the permit to ensure that the proposed test burn did not exceed 15 TPY of any pollutant. Because the emissions from this project were less than 15 TPY of any pollutant, the project occurred in accordance with the ARM 17.8.745(1). Permit #0513-03 replaced Permit #0513-02.

On May 1, 2001, PPL submitted a completed application to the Department proposing to add petroleum coke to the list of fuels to be used in Units 1 & 2 that are currently permitted to burn Syncoal and Rosebud coal. The alteration to Permit #0513-03 limited the amount of petroleum coke that could be burned in Units 1 & 2. The conditions included in the permit for the burning of petroleum coke are Section II.A.9, 10, 11, 12, and 13, Section II.B.3 and Section II.F. The permitting action was not considered a major modification under the PSD regulations because the facility was capable of accommodating petroleum coke. **Permit #0513-04** replaced Permit #0513-03.

On January 11, 2005, Arnold & Porter LLP, on behalf of PPL, submitted a request for an administrative amendment to Permit #0513-04. The request was to reduce the 3-hour rolling average SO<sub>2</sub> emissions limit (combined stack limit) for Units 3 & 4 from 4,273 lb/hr to 4,140 lb/hr.

The request was submitted in response to an outstanding concern of the Department and the Northern Cheyenne Tribe regarding emissions modeling for SO<sub>2</sub> increment consumption conducted for the issuance of the 1979 PSD permit for Units 3 & 4.

Included in the permit application, PPL submitted AERMOD modeling to demonstrate compliance with the Class I PSD increment for SO<sub>2</sub> on the Northern Cheyenne Reservation. The Department, in consultation with the EPA Region VIII and the Northern Cheyenne Tribe, requested an additional sensitivity analysis be conducted at a 75% load scenario to comply with national modeling guidance and the model's demonstrated sensitivity to plume rise. PPL submitted the sensitivity analysis demonstrating that the proposed SO<sub>2</sub> limit of 4,140 lb/hr would protect the 3-hour increment on the Northern Cheyenne Reservation.

In addition, PPL submitted a request to the Department on November 20, 2000, to remove the ambient air quality monitoring requirements from Permit #0513-04 for Units 3 & 4. Based on the request and additional information submitted on October 3, 2001, the Department approved the removal of the monitoring requirements. The Department sent an approval letter dated October 19, 2001, after PPL demonstrated that the potential to cause a violation of the ambient standard is minimal at all sites and monitoring may be removed as provided for in the October 1998 Department guidance.

The permit format, language, and rule references were updated to reflect current Department permit format, language and rule references. **Permit #0513-05** replaced Permit #0513-04.

On October 23, 2007, PPL submitted a request for an administrative amendment to Permit #0513-05. The request was to incorporate revised NO<sub>x</sub> standards for Units 3 & 4, as stipulated by Consent Decree CV-07-40-BLG-RFG-CSO entered on May 14, 2007. In addition, the Department was requested to clarify that the compliance demonstration for the revised limits would be demonstrated for an “operating day” firing any fuel, which would go beyond the Consent Decree requirements. **Permit #0513-06** replaced Permit #0513-05.

On December 31, 2008, PPL submitted an application to modify Permit #0513-06. The modification was to establish a mercury emission limit for Units 1-4, pursuant to ARM 17.8.771, and to provide an analysis of potential mercury control options including, but not limited to, boiler technology, mercury emission control technology, and any other mercury control practices. The application included a proposed mercury emission control strategy, a proposed mercury emission limit, and associated operating requirements for Units 1-4 in order to comply with ARM 17.8.771. The permit action updated rule references, permit format, and the emissions inventory. **Permit #0513-07** replaced Permit #0513-06.

On January 28, 2010, PPLM requested an administrative amendment to MAQP #0513-07. The amendment was to update a compliance date for NO<sub>x</sub> emissions from Colstrip Unit 4 pursuant to its Consent Decree. A stipulation to the Consent Decree was filed on December 22, 2009 due to the occurrence of a Force Majeure incident, such that a new compliance date for installation and operation of the digital controls, low-NO<sub>x</sub> burners and overfire air was established to be March 31, 2010 or seven days after the completion of NO<sub>x</sub> emission controls tuning, whichever date is earlier. Tuning was completed on Unit 4 NO<sub>x</sub> control systems on January 12, 2010. This amendment updated the permit to reflect the changes to the Consent Decree; specifically, the applicable compliance dates in Sections II.A.18 and 20 were updated to January 19, 2010. **MAQP #0513-08** replaced MAQP #0513-07.

#### Title V Operating Permits

On September 23, 1997, draft **Operating Permit #OP0513-00** was issued to MPC for Units 1 & 2. The permit contained the necessary requirements to comply with the operating permit program requirements and the acid rain permitting requirements.

On October 6, 1997 (prior to the permit becoming final and effective), **Operating Permit #OP0513-01** was issued to MPC to correct errors in Operating Permit #OP0513-00. The permit contained a typographical error in the expiration date. The Montana air quality regulation and the acid rain regulations both require the issuance of permit with a fixed term of 5 years. The permit effective date was January 1, 1998. The expiration date should have been December 31, 2002, instead of 2003. Operating Permit #OP0513-01 replaced Operating Permit #OP0513-00.

On April 12, 2005, the Department issued **Operating Permit #OP0513-02** final and effective. The permit was a renewal of Title V Operating Permit #OP0513-01 and Operating Permit #OP1187-00. The two permits, along with the Acid Rain Permit #AR1187-00 were combined as Operating Permit #OP0513-02. Changes in the permit include the addition of two small propane fueled emergency

backup generators at the facility, and the removal of the auxiliary boiler for Units 3 & 4. Also, PPL submitted a CAM Plan for particulate matter (PM) for Units 1-4 in accordance with 40 CFR Part 64. A summary of the CAM plan can be found in Appendix I of the Title V Operating Permit. A complete copy of the CAM plan can be obtained from the Department or the facility.

The Department included a compliance plan/schedule in Section III.A. The Department believed that PPL had not been able to demonstrate compliance with protection of the 3-hour and 24-hour SO<sub>2</sub> increments (ARM 17.8.804 and ARM 17.8.820) on the Northern Cheyenne Reservation. The condition required PPL to submit a narrative description of how the facility would demonstrate compliance with these increments and provide a schedule for achieving such compliance. Further information can be found in Section I.F. Compliance Demonstration. The permit was also updated to reflect current permit rule citations and format. Operating Permit #OP0513-02 replaced Operating Permits #OP0513-01, #OP1187-00, and #AR1187-00.

An administrative amendment to incorporate the changes made to Operating Permit #0513-05 was completed. The amendment included the reduction of the 3-hour rolling average SO<sub>2</sub> emissions limit (combined stack limit) for Units 3 & 4 from 4,273 lb/hr to 4,140 lb/hr. **Operating Permit #OP0513-03** replaced Operating Permit #OP0513-02.

On October 23, 2007, PPL Montana submitted a request to incorporate revised NO<sub>x</sub> standards for Units 3 & 4 into PPL's MAQP and Title V permits. The application was deemed complete on December 20, 2007. The request was to incorporate revised NO<sub>x</sub> standards for Units 3 & 4, as stipulated by Consent Decree CV-07-40-BLG-RFG-CSO entered on May 14, 2007. In addition, the Department clarified that the compliance demonstration for the revised limits would be demonstrated for an "operating day" firing any fuel, which would go beyond the Consent Decree requirements. **Operating Permit #OP0513-04** replace #OP0513-03.

As part of this significant modification, the Department made the following additional administrative corrections:

- Renumbered the emitting units (EU) in the table under Section II to reflect the current identifications;
- Added EU016, for the alternate fuel loading requirements;
- Removed EU012, for the scrubber relining process, since it was determined that this was a maintenance procedure involving air pollution control for EU001 – EU004 and was in fact an insignificant activity;
- Revised opacity requirements for Units 1 - 4 to include opacity of 20% or greater averaged over 6 consecutive minutes "*except for one 6-minute period per hour of not greater than 27% opacity*" consistent with the NSPS;
- Revised NO<sub>x</sub> limitations under Section III.B.7 and III.C.10, to reflect conformance with Acid Rain provisions;
- Added Units 1 & 2 Syncoal and petroleum coke and scrubber operation requirements;
- Changed SO<sub>2</sub> reference test methods from Methods 6 & 6A to Methods 6 & 6C;

- Clarified continuous emission monitoring systems (CEMS) reporting (opacity, SO<sub>2</sub> and NO<sub>x</sub>) to be quarterly for Unit 1 – 4. While the Department has historically requested quarterly reporting, the Title V permit was previously inconsistent. This included updates to EU001 – EU004 as well as Appendices E, F, and G;
- Clarified that compliance with the requirements in the consent decree entered 5/14/07 (Consent Decree CV-07-40-BLG-RFC-CSO0 is deemed compliance with the Units 3 & 4 requirements for Best Available Retrofit Technology (BART); and
- Renumbered CEMS regulatory requirements to reflect the revised NSPS – 40 CFR 60, Subpart Da.

On December 31, 2008, PPL submitted an application to modify Operating Permit #OP0513-04 to include mercury emission limitations under ARM 17.8.771 that were incorporated into MAQP #0513-07 on April 9, 2009. On February 3, 2009, PPL sent a letter to the Department requesting that Steve Christian be designated as an Alternate Responsible Official. Operating Permit #OP0513-04 was updated to reflect the new mercury control requirements and the new Alternate Responsible Official. **Operating Permit #OP0513-05** replaced Operating Permit #OP0513-04.

On January 28, 2009, PPL requested an administrative amendment to Operating Permit #OP0513-05. The amendment was to update a compliance date for oxides of nitrogen (NO<sub>x</sub>) emissions from Colstrip Unit 4 pursuant to Consent Decree CV-07-40-BLG-RFC-CSO (Consent Decree) entered May 14, 2007. A stipulation to the Consent Decree was filed on December 22, 2009 due to the occurrence of a Force Majeure incident, such that a new compliance date for installation and operation of the digital controls, low-NO<sub>x</sub> burners and overfire air was established to be March 31, 2010 or seven days after the completion of NO<sub>x</sub> emission controls tuning, whichever date is earlier. Tuning was complete on Unit 4 NO<sub>x</sub> control systems on January 12, 2010. This amendment updated the permit to reflect the changes to the Consent Decree, specifically compliance dates for Unit 4 NO<sub>x</sub> emissions at Sections III.C.14 and 16 were changed to January 19, 2010. **Operating Permit #OP0513-06** replaced Operating Permit #OP0513-05.

#### **D. Current Permit Action**

On March 25, 2010, PPL submitted an application for renewal of their Title V Operating Permit. PPL's Title V OP0513-06 expired on April 12, 2010. The current permit action is a renewal of #OP0513-06 for PPL and includes updates of current permit language and rule references used by the Department.

Additionally, during the renewal process, it became apparent that language and requirements included within a Findings of Fact and Conclusions of Law signed by the Board of Health and Environmental Sciences (BHES) on November 21, 1975 had not been included within the permit. The document contains information and requirements pertaining to grant conditional certification for Colstrip Units #3 and #4 made pursuant to Section 70-810 (L), Revised Code of Montana (R.C.M) 1947 of the Major Facility Siting Act (MFSa). The document states that "The applicant's will utilize only coal from the Rosebud seam. It will at no time exceed 1% inlet sulfur content. Daily testing of the coal and sulfur content will be required to effect that control." Operating Permit #OP0513-06 did not include a requirement specifying the coal source (i.e. Rosebud seam). Operating Permit #OP0513-07 incorporates this condition as required under the requirements of Title V of the Federal Clean Air Act (FCAA).

**Operating Permit #OP0513-07** replaces Operating Permit #OP0513-06.



## E. Taking and Damaging Analysis

HB 311, the Montana Private Property Assessment Act, requires analysis of every proposed state agency administrative rule, policy, permit condition or permit denial, pertaining to an environmental matter, to determine whether the state action constitutes a taking or *damaging* of private real property that requires compensation under the Montana or U.S. Constitution. As part of issuing an operating permit, the Department is required to complete a Taking and Damaging Checklist. As required by 2-10-101 through 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

## F. Compliance Designation

The Colstrip facility was last inspected on November 19, 2009. A Full Compliance Evaluation was conducted on this date as well. The facility was found to be in compliance with all applicable requirements.

### History

Upon issuance of Draft Operating Permit #OP0513-02, the Department did not believe that PPL had been able to demonstrate compliance with protection of the 3-hour and 24-hour SO<sub>2</sub> increments (ARM 17.8.820) on the Northern Cheyenne Reservation. Therefore, the Department required PPL to submit

a narrative description of how PPL would demonstrate compliance with these increments and provide a schedule for achieving such compliance. The compliance demonstration was to be based on air quality modeling as approved by the Department.

The draft permit requested that PPL submit a final compliance plan for approval within 180 days after final issuance of the facility's Title V Operating Permit #OP0513-02. The final compliance plan was required to contain the following information:

- a. A schedule of remedial measures to assure compliance;
- b. Milestones associated with those measures in appropriate sequence;
- c. A schedule of submission of certified progress reports (no less frequently than every 6 months); and
- d. Any anticipated change in applicable requirements.

The draft permit stated that PPL was required to achieve and demonstrate compliance with protection of the 3-hour and 24-hour SO<sub>2</sub> increments on the Northern Cheyenne Reservation within 18 months after the final issuance of Operating Permit #OP0513-02.

PPL submitted a modeling demonstration to the Department on September 22, 2004, concerning the impact of emissions from Units 3 & 4 on the 3-hour and 24-hour SO<sub>2</sub> increments on the Northern Cheyenne Reservation. The Department and PPL, with participation by the Northern Cheyenne Tribe and EPA Region VIII, discussed this modeling and any appropriate refinements. The Department concurred that if an agreement on the modeling analysis could be reached and appropriate revisions to PPL's emission limits identified prior to this Title V permit being issued Proposed, the compliance schedule may not be necessary.

The modeling raised concerns that emissions from Units 3 & 4 at the allowable 3-hour limit could cause a violation of the increment on the Northern Cheyenne Reservation. Based on the modeling, PPL submitted a request for an administrative amendment to the facility's MAQP #0513-04 to reduce the 3-hour rolling average SO<sub>2</sub> emissions limit (combined stack limit) for Units 3 & 4 from 4,273 pounds/hour to 4,140 pounds/hour. At this limit, PPL is in compliance with ARM 17.8.820.

The Department requested one further sensitivity analysis be conducted to comply with the national modeling guidance and the model's demonstrated sensitivity to plume rise because the limit requested by PPL left no room for error. The Department and the Northern Cheyenne Tribe proposed that PPL consider 90% of the facility's increment consumption to leave room for error and avoid similar concerns of increment consumption in the future. PPL agreed to research the effects of decreasing the 3-hour limit on the facility's operation within the next several months. However, the modeling submitted by PPL, along with the request to amend Permit #0513-04, met the requirement proposed in Draft Operating Permit #OP0513-02 and therefore condition III.A.17 was removed from Proposed Operating Permit #OP0513-02. The Department proceeded to change the 3-hour SO<sub>2</sub> limit in PPL's MAQP. This limit was included in PPL's Title V permit.

## SECTION II. SUMMARY OF EMISSION UNITS

### A. Facility Process Description

PPL operates Units 1, 2, 3, & 4 tangential coal fired boilers and associated equipment for the generation of electricity.

### B. Emission Units and Pollution Control Device Identification

Emission Units ID	Description	Pollution Control Device/Practice
EU001	Unit #1 – Tangential Coal Fired Boiler	Wet Venturi Scrubber
EU002	Unit #2 – Tangential Coal Fired Boiler	Wet Venturi Scrubber
EU003	Unit #3 – Tangential Coal Fired Boiler	Wet Venturi Scrubber
EU004	Unit #4 – Tangential Coal Fired Boiler	Wet Venturi Scrubber
EU005	Auxiliary Propane Boiler (1 & 2)	None
EU006	Building Heating Boiler (3 & 4)	Fabric filters/enclosures
EU007	Coal Handling System (1 & 2)	Enclosed conveyors Dust Suppressant Telescopic Chute
EU008	Coal Handling System – (silos, distribution bin, surge pile tunnel, crushing and sampling house, and vacuum cleaning system) (3 & 4)	Fabric filters
EU009	Coal Piles (Wind Erosion)	Sealant on some storage piles, Dust suppression system, Enclosures
EU010	Emergency Diesel Generators	None
EU011	Internal Combustion Engines (Vehicles)	None
EU012	Lime Handling System	Pneumatic Unloading
EU013	Plant Roads	Dust suppressant is applied annually and water is applied as needed
EU014	Process Ponds	Material is wet
EU015	Underground Gasoline Tank	None
EU016	Alternate Fuel Loading (Syn Coal & Pet Coke)	Bin Vent, covered transfer operations
EU017	Tangential Coal Fired Units 1-4 Mercury Emissions	Mercury oxidizer/sorbent
EU018	Mercury Oxidizer/Sorbent Handling Systems (Units 1-4)	Bin Vent Filter

### C. Categorically Insignificant Sources/Activities

The following tables list the emission units included as insignificant in PPL's operating permit.

Emissions Unit ID	Description
IEU01	Hydrazine Bulk Storage Tank Vent
IEU02	LPG Vaporizer
IEU03	Unit #1 Cooling Tower
IEU04	Unit #2 Cooling tower
IEU05	Unit #3 Cooling Tower
IEU06	Unit #4 Cooling Tower
IEU07	Waste Site
IEU08	Boiler Chemical Cleaning Process
IEU09	LPG System Safety Valves and Vents
IEU10	Process Tank Vents
IEU11	Process Ponds
IEU12	Boiler Chemical Cleaning Process
IEU13	Diesel Tanks
IEU14	Scrubber Relining Process

Cooling Towers #3 and #4 were included in the original operating permit application as insignificant emission units. The Department questioned this determination and requested information from PPL. The facility submitted additional information on December 16, 1996, in response to a request for information on the operating permit application for Units 1 & 2, which included a statement that Units 1 & 2 do not use any chromium-based compounds in the cooling towers. This also holds true for Units 3 & 4. Since the cooling towers are not major sources or integral part of a major source as defined in Section 112(a)(1) of the Federal Clean Air Act and chromium-based water treatments are not used, the Department agrees with PPL that the cooling towers are not subject to 40 CFR 63 Subpart Q. Therefore, IEU04, IEU05, IEU06, and IEU07 are considered insignificant emission units.

The Building Heating Boiler emissions unit was identified in the original application as insignificant, but has been determined to be a significant emissions unit. It has been determined to be significant because if PPL operates the Building Heating Boiler under the alternative operating scenario there are specific applicable requirements. When PPL is not operating the Building Heating Boiler, there are no emissions and the emissions unit is in compliance with all applicable requirements. PPL is required to perform the necessary monitoring, recordkeeping, and reporting for all applicable requirements.

Two small propane fueled emergency backup generators were added to the insignificant unit list in Operating Permit #OP0513-02. The scrubber relining process was removed as an emitting unit and moved to the insignificant unit list in Operating Permit #OP0513-04.

## SECTION III. PERMIT CONDITIONS

### A. Emission Limits and Standards

#### **Tangential Coal Fired Boilers 1&2 (EU001 and EU002)**

Units 1 & 2 (EU001 and EU002) are subject to 40 CFR 60, Subpart D – Standards of Performance for Fossil-Fuel-Fired Steam Generators for which Construction Commenced After August 17, 1971. Under this provision, EU001 and EU002 have a PM limit of 0.10 lb/MMBtu, a SO<sub>2</sub> limit of 1.2 lb/MMBtu heat input and a NO<sub>x</sub> limit of 0.7 lb/MMBtu heat input. Based on the maximum heat input value of the units, PPL is limited to a maximum fuel use of 28% petroleum coke and a maximum of 280,320 tons of petroleum coke during any rolling 12-month period for each emitting unit. The units are also limited to a maximum of 700,800 tons of Syncoal during any rolling 12-month period.

The Department determined 40 CFR 60, Subpart D requirements for the monitors to be less stringent than the requirements of the Acid Rain Provisions contained in 40 CFR Part 75. The basis of this position is that the monitors required by 40 CFR 60, Subpart D are used to indicate compliance. The monitoring requirements of this Operating Permit are to be used to determine compliance. The following sections of 40 CFR Part 60 are not included in the Operating Permit as applicable requirements: 40 CFR §60.45(c) and 40 CFR §60.13(a) through (g) and (i) through (j). These requirements are replaced with the requirements contained in 40 CFR Part 75 and PPL is required to demonstrate compliance using the 40 CFR Part 75 CEMS for SO<sub>2</sub>, NO<sub>x</sub>, and opacity.

Units 1 & 2 are subject to 40 CFR 60, Subpart Y – Standards of Performance for Coal Preparation Plants. The facility shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements in Subpart Y. Subpart Y affected sources include the truck dump station, the lime silo bin vent, and any other affected source constructed or modified after October 24, 1974.

The Phase II permit requirements for SO<sub>2</sub> have been included in this Operating Permit.

#### NO<sub>x</sub> History

PPL submitted a Phase I Permit Application, NO<sub>x</sub> Compliance Plan to EPA Region VIII in August 1996. The application was submitted in accordance with the requirements of 40 CFR §76.9 for an early election unit with a deadline of submittal of January 1, 1997. Units 1 & 2 are Group 1, Phase II boilers. PPL was required to comply with the emission limit of 0.45 lb/mmBtu of heat input on an annual average basis for tangentially fired boilers (40 CFR §76.5) beginning with January 1, 1997, emissions and ending with December 31, 2007.

In accordance with 40 CFR §76.8(d)(1)(ii), EPA was responsible for issuing the early NO<sub>x</sub> reduction permit. The state has not been delegated this authority. Under 40 CFR §72.73(b)(2), the Department was required to include, not later than January 1, 1999, the acid rain permit requirements for nitrogen oxides. PPL, under 40 CFR §76.9(b), submitted a Phase II NO<sub>x</sub> permit application by January 1, 1998.

On January 1, 2008, the early election plan expired and PPL became subject to the NO<sub>x</sub> limitations for Group I, Phase II boilers under 40 CFR 76.7.

### **Tangential Coal Fired Boilers 3 & 4 (EU003 and EU004)**

In the original permit application, PPL identified the exhaust gas temperature, (190°F) and the limit of 1.225 lb/MMBtu on SO<sub>2</sub> emissions as applicable requirements for EU003 and EU004. The minimum exhaust gas temperature and this SO<sub>2</sub> limit were not identified in any air quality permits issued by the Department or by the EPA for EU003 or EU004. These requirements come from the certificate issued as part of the Major Facility Siting Act (MFSA). The Department does not consider these requirements as applicable requirements for operating permit purposes. The MFSA certificate required the Department to issue an MAQP. Based on this, the Department's position is that all the applicable requirements for operating permit purposes are contained in the MAQP.

PPL's EU003 and EU004 are subject to 40 CFR §60.40 (Subpart D) since construction of the units began after 1971 and before September 18, 1978.

The Department determined Subpart D requirements for the monitors to be less stringent than the requirements of the Acid Rain Provisions contained in 40 CFR Part 75. The basis of this position is that the monitors required by 40 CFR 60, Subpart D are used to indicate compliance. The monitoring requirements of this Operating Permit are to be used to determine compliance. The following sections of 40 CFR 60 are not included in the Operating Permit as applicable requirements: 40 CFR §60.45(c) and 40 CFR §60.13(a) through (g) and (i) through (j). These requirements are replaced with the requirements contained in 40 CFR Part 75 and PPL is required to demonstrate compliance using the Part 75 CEMS for SO<sub>2</sub>, NO<sub>x</sub>, and opacity.

The Department has determined the monitoring requirements contained in Appendix III of the EPA PSD permit issued September 11, 1979, and Sections II.C.1.e., II.C.2., II.E.1., and II.E.2. in MAQP #1187-03 issued October 13, 1996, are duplicate requirements. The Department has determined compliance with 40 CFR Part 75 will be compliance with these requirements for the SO<sub>2</sub>, NO<sub>x</sub>, and opacity monitors.

The Phase II permit requirements for SO<sub>2</sub> have been included in this Operating Permit.

#### NO<sub>x</sub> History

PPL submitted a Phase I Permit Application, NO<sub>x</sub> Compliance Plan to EPA Region VIII in August 1996. The application was submitted in accordance with the requirements of 40 CFR §76.9 for an early election unit with a deadline of submittal of January 1, 1997. Units 3 & 4 are Group 1, Phase II boilers. PPL was required to comply with the emission limit of 0.45 lb/mmBtu of heat input on an annual average basis for tangentially fired boilers (40 CFR §76.5) beginning with January 1, 1997, emissions and ending with December 31, 2007.

In accordance with 40 CFR §76.8(d)(1)(ii), EPA was responsible for issuing the early NO<sub>x</sub> reduction permit. The state has not been delegated this authority. Under 40 CFR §72.73(b)(2), the Department was required to include, not later than January 1, 1999, the acid rain permit requirements for nitrogen oxides. PPL, under 40 CFR §76.9(b), submitted a Phase II NO<sub>x</sub> permit application by January 1, 1998.

On January 1, 2008, the early election plan expired and PPL became subject to the NO<sub>x</sub> limitations for Group I, Phase II boilers under 40 CFR 76.7.

### **Auxiliary Propane Boiler (EU05)**

PPL is required to notify the Department of both start up and shut down of the auxiliary propane heater.

### **Building Heater Boiler (EU06)**

PPL is required to notify the Department of both start up and shut down of the building heater boiler.

No other emission units at the facility contain source specific emissions limits or conditions.

### **Tangential Coal Fired Units 1-4 Mercury Emissions**

New mercury control requirements implemented under the preconstruction permitting program have required that PPL obtain a MAQP to include mercury provisions under the Administrative Rules of Montana (ARM) 17.8.771 for the Colstrip Plant. On April 9, 2009, the Department issued MAQP #0513-07 with the following mercury limits and operating requirements, which are also reflected in Section III.L of Permit #OP0513-05:

- Beginning January 1, 2010, facility-wide emissions of mercury (Hg) shall not exceed 0.9 pounds per trillion British thermal units (lb/TBtu), calculated as a rolling 12-month average (ARM 17.8.771).
- On each Unit 1-4, PPL shall install a mercury control system that oxidizes and sorbs emissions of mercury. PPL shall implement the operation and maintenance of mercury control systems on or before January 1, 2010 (ARM 17.8.771).

## **B. Monitoring Requirements**

ARM 17.8.1212(1) requires that all monitoring and analysis procedures or test methods required under applicable requirements are contained in Operating Permits. In addition, when the applicable requirement does not require periodic testing or monitoring, periodic monitoring must be prescribed that is sufficient to yield reliable data from the relevant time period that is representative of the source's compliance with the permit.

The requirements for testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance do not require the permit to impose the same level of rigor for all emission units. Furthermore, they do not require extensive testing or monitoring to assure compliance with the applicable requirements for emission units that do not have significant potential to violate emission limitations or other requirements under normal operating conditions. When compliance with the underlying applicable requirement for an insignificant emissions unit is not threatened by lack of regular monitoring and when periodic testing or monitoring is not otherwise required by the applicable requirement, the status quo (**i.e., no monitoring**) will meet the requirements of ARM 17.8.1212(1). Therefore, the permit does not include monitoring for insignificant emissions unit.

This permit includes periodic monitoring or recordkeeping for each applicable requirement. The information obtained from the monitoring and recordkeeping will be used by PPL to periodically certify compliance with the emission limits and standards. However, the Department may request additional testing to determine compliance with the emission limits and standards.

Units 1-4 are required to maintain CEMS for SO<sub>2</sub>, NO<sub>x</sub>, CO<sub>2</sub>, and opacity. In addition, the Department determined continuous monitoring is also required for stack gas temperature, stack gas moisture (where necessary), megawatt production, and Btu per hour (as a function of heat rate and megawatt production). Units 1-4 are also required to maintain an MEMS for mercury as of January 1, 2010.

The Department determined that fugitive emission units located at the facility require bi-monthly visual inspections. The method of demonstrating compliance includes a requirement to observe specific sites and to log the information. The log will be kept at the plant site and be available for review during inspections. The compliance demonstration requires verification that visual inspections were performed and they were recorded and a log maintained.

The Department determined this frequency of visual monitoring was sufficient for this facility based on a number of factors. First, the fugitive emissions of many of the locations are controlled using dust abatement techniques. Second, PPL has a Dust Abatement Program in place. The program is used to control fugitive dust emissions at the plant site and for the entire Colstrip area. The Dust Abatement Task Force (DATF) was formed in 1982 and meets at least once per year to set the strategies for the upcoming year's activities as well as to review the pertinent events from the previous year. As a result of the DATF, specific monitoring and control activities have evolved for the Colstrip area. The DATF has worked to ensure that monitoring and control of dust is integrated into the daily activities, which have the potential of creating emissions.

Based on this information, the Department has determined the visual monitoring contained in the operating permit will provide a backup to the existing efforts of the DATF and ensure visual monitoring will continue on an ongoing basis.

### **C. Test Methods and Procedures**

The operating permit may not require testing for all sources if routine monitoring is used to determine compliance, but the Department has the authority to require testing if deemed necessary to determine compliance with an emission limit or standard. In addition, the permittee may elect to voluntarily conduct compliance testing to confirm its compliance status.

### **D. Recordkeeping Requirements**

The permittee is required to keep all records listed in the operating permit as a permanent business record for at least five years following the date of the generation of the record.

### **E. Reporting Requirements**

Reporting requirements are included in the permit for each emissions unit, and Section V of the Operating Permit "General Conditions" explains the reporting requirements. However, PPL is required to semi-annual and annual monitoring reports to the Department, and to annually certify compliance with the applicable requirements contained in the permit. The reports must include a list of all emission limit and monitoring deviations, the reason for any deviation, and the corrective action taken as a result of any deviation. PPL is also required to submit quarterly reports as required by Section III.B, III.C, and Appendices E, F, G, H, I, and J of Operating Permit #OP0513-07.

### **F. Public Notice**

In accordance with ARM 17.8.1232, a public notice was published in the *Billings Gazette* newspaper on May 17, 2011. The Department provided a 30-day comment period on the Draft Operating Permit from May 17, 2011, to June 16, 2011. ARM 17.8.1232 requires the Department to keep a record of



both comments and issues raised during the public participation process. The comments and issues received by June 16, 2011, will be summarized along with the Department's responses, in the following table. All comments received during the public comment period will be promptly forwarded to PPL so they may have an opportunity to respond to these comments as well.

#### **Summary of Public Comments**

<b>Person/Group Commenting</b>	<b>Comment</b>	<b>Department Response</b>

#### **G. Draft Permit Comments**

#### **Summary of Permittee Comments**

<b>Permit Reference</b>	<b>Permittee Comment</b>	<b>Department Response</b>

#### **Summary of EPA Comments**

<b>Permit Reference</b>	<b>EPA Comment</b>	<b>Department Response</b>

#### **SECTION IV. NON-APPLICABLE REQUIREMENTS**

The Department reviewed the rules and regulations contained in Section 8 of the original application that PPL identified as non-applicable. The Department included those regulations that it agreed were non-applicable to Units 3 & 4 in the Operating Permit in Section IV along with the reasons for non-applicability.

The Department did not identify all of the rules or regulations identified by PPL. Rules and regulations that identify procedural requirements and those that do not establish emission limits or applicable requirements on the facility.

40 CFR 60, Subpart Da is not applicable because construction of the facility began prior to September 18, 1978, except the CEMS for Units 3 & 4 were determined to be subject to this NSPS.

## **SECTION V. OTHER CONSIDERATIONS**

### **A. MACT Standards**

PPL is subject to the MACT standards under 40 CFR 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, as applicable. In 2007, EPA vacated the 2004 Boiler MACT rules, and has promulgated rules applicable to this facility with the final rule being effective on May 20, 2011.

The EPA has issued a proposed rule for National Emission Standards for Hazardous Air Pollutants from Coal- and Oil-Fired Electric Utility Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units. This is referred to as the Utility MACT. PPL will be subject to this Utility MACT once finalized.

### **B. NESHAP Standards**

As of the issuance of this permit, the Department is unaware of any proposed or pending NESHAP standards, in addition to those that are listed, that are applicable to this facility.

### **C. NSPS Standards**

As of the issuance date of this permit, the Department is unaware of any future NSPS Standards that may be promulgated that will affect this facility.

### **D. Risk Management Plan**

A Risk Management Plan as defined in 40 CFR Part 68 is required for Units 3 & 4. The facility must comply with 40 CFR 68 requirements no later than June 21, 1999; 3 years after the date on which a regulated substance is first listed under 40 CFR 68.130; or the date on which a regulated substance is first present in more than a threshold quantity in a process, whichever is later.

### **E. Compliance Assurance Monitoring (CAM) Plan**

An emitting unit located at a Title V facility that meets the following criteria listed in ARM 17.8.1503 is subject to Subchapter 15 and must develop a CAM Plan for that unit:

- The emitting unit is subject to an emission limitation or standard for the applicable regulated air pollutant (unless the limitation or standard that is exempt under ARM 17.8.1503(2));
- The emitting unit uses a control device to achieve compliance with such limit; and
- The emitting unit has potential pre-control device emission of the applicable regulated air pollutant that is greater than major source thresholds.

The PPL Costrip facility meets the above criteria for particulate matter (PM). Refer to Appendix I of Operating Permit #OP0513-07 for a summary of the PM CAM plan.

### **F. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule**

On May 7, 2010, EPA published the “light duty vehicle rule” (Docket # EPA-HQ-OAR- 2009-0472, 75 FR 25324) controlling greenhouse gas (GHG) emissions from mobile sources, whereby GHG became a pollutant subject to regulation under the Federal and Montana Clean Air Act(s). On June 3, 2010, EPA promulgated the GHG “Tailoring Rule” (Docket # EPA-HQ-OAR-2009-0517, 75 FR

31514) which modified 40 CFR Parts 51, 52, 70, and 71 to specify which facilities are subject to GHG permitting requirements and when such facilities become subject to regulation for GHG under the PSD and Title V programs.

Under the Tailoring Rule, any PSD action (either a new major stationary source or a major modification at a major stationary source) taken for a pollutant or pollutants other than GHG that would become final on or after January 2, 2011 would be subject to PSD permitting requirements for GHG if the GHG increases associated with that action were at or above 75,000 TPY of carbon dioxide equivalent (CO<sub>2</sub>e) and greater than 0 TPY on a mass basis. Similarly, if such action were taken, any resulting requirements would be subject to inclusion in the Title V Operating Permit. Facilities which hold Title V permits due to criteria pollutant emissions over 100 TPY would need to incorporate any GHG applicable requirements into their operating permits for any Title V action that would have a final decision occurring on or after January 2, 2011.

Starting on July 1, 2011, PSD permitting requirements would be triggered for modifications that were determined to be major under PSD based on GHG emissions alone, even if no other pollutant triggered a major modification. In addition, sources that are not considered PSD major sources based on criteria pollutant emissions would become subject to PSD review if their facility-wide potential emissions equaled or exceeded 100,000 TPY of CO<sub>2</sub>e and 100 or 250 TPY of GHG on a mass basis depending on their listed status in ARM 17.8.801(22) and they undertook a permitting action with increases of 75,000 TPY or more CO<sub>2</sub>e and greater than 0 TPY of GHG on a mass basis. With respect to Title V, sources not currently holding a Title V permit that have potential facility-wide emissions equal to or exceeding 100,000 TPY of CO<sub>2</sub>e and 100 TPY of GHG on a mass basis would be required to obtain a Title V Operating Permit.

PPL is currently subject to PSD permitting in that this facility is a listed source and has a PTE of 100 TPY or more of pollutants subject to regulation under the Federal Clean Air Act. GHG must be analyzed along with all criteria pollutants for any permitting action to determine if that action is a major modification and subject to PSD permitting. The Department, upon receiving a de minimis request, modification, or other future permitting action, will request such information as needed to determine PPL's GHG emissions. Any applicable GHG requirements, including those that develop as a result of a PSD permitting action, will be incorporated into the Title V permit.